

## Methods for fumigating soil

**Description of Technology:** The present invention provides for methods for fumigating soil containing deleterious organisms such as nematodes. The methods utilize an effective amount of acrolein over sole demand for acrolein which when added to the soil will control the organisms but will not exhibit phytotoxicity towards the existing or future plant life.

## **Patent Listing:**

1. **US Patent No.** 6,294,584, Issued on September 25, 2001, "Methods for fumigating soil" <a href="http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HTTOFF&p=1&u=%2Fnetahtml%2FPTO%2Fsearch-bool.html&r=1&f=G&l=50&co1=AND&d=PTXT&s1=6.294,584.PN.&OS=PN/6,294,584&RS=PN/6,294,584

**Market Potential**: Fungi, bacteria, nematodes, viruses and insects can cause problems in soil designated for growing. This soil contamination will lead to the dying off of plants, growth rate problems, root problems and production decrease. The need for soil disinfestation is thus recognized as a manifest one.

However, due to the United States' participation in the Montreal Protocol, compounds that have a detrimental effect on the ozone layer will be banned as of Jan. 1, 2001. These compounds include chlorinated fluorocarbons (CFC's) and methyl bromide.

To that end, an alternative fumigant that possesses attributes similar to methyl bromide (no toxic residue, efficacy, and ease of use/economics) must be found. This fumigant should leave no toxic soil residue, should be biodegradable, and should exhibit efficacy against a wide variety of soil pathogens, as well as insects and nematodes.

The present inventors have discovered means for employing acrolein as a soil fumigant. Acrolein is a known pesticide that is used to treat liquids containing slime-forming microorganisms. Acrolein has been found to effectively control bacteria such as Bacillus subtilis. Pseudomonas putrefaciens and Escherichia coli: fungi such as Penicillium italicum, Saccharomyces cereviseae and Helminthosporium turcicum: algae; macroinvertebrates, such as snails and clams; and aquatic plants and weeds. Acrolein is also more effective than other biocides, such as chlorine, in controlling macroinvertebrates and submerged, as well as floating, aquatic weeds and algae. Acrolein can be administered to soil as a fumigant while avoiding the usual effects of phytotoxicity, which would otherwise prevent its utilization, by the specific method of application.

## **Benefits:**

 Leaves no toxic soil residue, is biodegradable, and exhibits efficacy against a wide variety of soil pathogens, as well as insects and nematodes.

## **Applications:**

Soil treatment.